

We Claim

1. A switched reluctance electrical machine comprising a salient pole stator and a salient pole carrier along with a plurality of coils for association with magnetic means, the stator and the carrier configured to allow relative motion in use between the stator and carrier, each coil including a tap to alter the effective number of turns in that coil dependent upon the speed of relative motion between the carrier and the stator.
2. A machine as claimed in claim 1 wherein the tap or taps are fixed in terms of the effective number of turns in its coils.
3. A machine as claimed in claim 1 wherein the tap is arranged to reduce the effective number of turns in its coils by, typically, approximately a third of the total number of turns in that coil.
4. A machine as claimed in claim 1 wherein the tap is individually determined for each coil of the plurality of coils in terms of incremental spacing to alter the effective number of turns in its coil.
5. A machine as claimed in claim 1 wherein the tap is automatically adjusted relative to the carrier speed.
6. A machine as claimed in claim 1 wherein the tap is arranged to provide substantially the same effective number of turns in each coil of the plurality of coils.
7. A machine as claimed in claim 1 wherein the tap is manually adjustable in terms of the effective number of turns in its coil.
8. A machine as claimed in claim 1 wherein the tap is adjustable dependent upon historical performance of the machine in terms of carrier speed.
9. A machine as claimed in claim 1 in which the tap is adjustable through a control loop relative to the current carrier speed.
10. A machine as claimed in claim 1 wherein the tap is

switched into operation through an inertia switch dependent upon the carrier speed.

11. A machine as claimed in claim 1 wherein the tap ensures that the number of turns effective in the coil are
5 those furthest from the stator pole tip.

12. An machine as claimed in claim 1 wherein the torque or power output from that electrical machine is substantially constant for a range of speed.

13. An machine as claimed in claim 1 wherein the carrier
10 is a rotor.

14. An machine as claimed in claim 1 in which the carrier is a linear beam.

15. An machine as claimed in claim 1 wherein relative motion in use is due to appropriately energising the coils
15 in sequence to constitute an electric motor.

16. An machine as claimed in claim 1 wherein the relative motion in use is due to application of an external driving force in order to constitute an electric current generator.

17. An machine as claimed in claim 1 wherein the magnetic
20 means is permanent magnets or electro-magnetic assemblies configured in the carrier or stator.